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DOCUMENT NO. HW-28471

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TITLE: UNCONFINED UNDERGROUND RADIOACTIVE WASTE AND CONTAMINATION IN THE 200 AREAS

AUTHOR: H. G. Ruppert

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DECLASSIFICATION CONFIRMED
BY *Sl Gyder* DATE *5/9/80*
BY *M. Snyder* DATE *5/9/80*
B Roberts 11/5/81
P. Sullivan 11-12-97

This document consists of 24 pages,
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July 1, 1953

To File:

UNCONFINED UNDERGROUND RADIOACTIVE WASTE AND CONTAMINATION IN THE 200 AREAS

The purpose of this report is to document the present knowledge about locations in the 200 Areas where radioactive material has been discharged to ground. Despite efforts to make this report complete, some information may have been overlooked. It is requested that additional pertinent data concerning the locations listed or other locations which may have been omitted be forwarded to the Exposure Illustrator, Radiological Sciences Department.

The report has been broken down into two classifications - planned and unplanned disposal. Planned disposal includes cribs, solid waste burial grounds, trenches, etc. Unplanned disposal includes locations where radioactive material was discharged to ground due to leaks in piping, process tank coil leaks, diversion box work, etc.

Revisions to this report will be issued as warranted by receipt of information on any new or old disposal areas.

CLASSIFICATION CANCELLED
Per *DOC, May 1973.*
By *L. Pope 4/1/74*

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PLANNED DISPOSAL

1. 241-B, #3 Crib and Tile Field

Second cycle waste from 221-B has been routed since startup to tank storage in 241-B with the supernate overflowing into the crib and tile field just north of the 110-111-112 tanks in the 241-B tank farm. In July 1951 the 5-6 cell drainage waste was also routed to this series of settling tanks and the crib and tile field. This continued until shutdown of the facility in 1952. The 224-B waste attendant with extensive decontamination and cleanup of the building during shutdown of the facility in 1952 were also routed to this cascade series, crib and tile field. This area is within the 241-B tank farm fence but is not further delimited.

2. 241-B, #1 and #2 Cribs

In September 1946 the 224-B wastes were routed to the 201-B settling tank. The supernatant overflowed from this tank to a two-crib cascade series just north of the 200 series tanks. In October 1947 the 5-6 cell drainage waste was also routed to this settling and crib series. In August of 1948 the 5-6 waste was rerouted. (See item #6) In October 1948 the 224-B wastes were rerouted to the 204, 3, 2-B cascade settling tank series but the supernatant continued to the same cribs. (See Item #1 for final route of 224-B wastes) This area is within the 241-B tank farm fence but is not further delimited in any way.

3. 242-B, #1 and #2 Cribs

The cribs consist of corrugated steel culverts that are 4' in diameter and 30' long. The culverts are buried vertically 10' beneath ground level and 60' apart. The perforations are ½" holes spaced 6" on center horizontally and 12" on center vertically. Condensate from the waste evaporator was first discharged to the cribs, located north of the 241-B tank farm, in December 1951. The area is enclosed with a fence and posted with radiation zone signs.

4. Trench from "B" Retention Basin To Swamp

The trench and swamp have been in use since startup of "B" facility for disposal of process tank jacket cooling water. Analysis of samples of water and mud from the ditch and swamp have shown only low level activity to date. Condenser cooling water from the 244-BX metal recovery facilities was directed via the trench to the swamp on startup of this unit in March 1953. The trench where open above ground and the swamp are posted about every 100 feet with radiation zone signs.

5. 200 East Industrial Burial Ground

This burial ground located between the "B" facility exclusion area and the 241-BX-BY tank farm is used for disposal of process equipment. The first trench dug in 1947 has been completely filled and is covered with six feet of clean earth. The second trench is approximately half full at this time. A third trench has been dug but has not been used. No records have been kept of the total activity buried here though dose rates on some of the equipment buried has been in excess of 35 rep/hr at surface. The area is enclosed with a wire fence and is posted with radiation zone signs.

6. 361-B Crib and Tile Field

In August 1948 the 361-B crib and tile field just North of the 361-B settling tank was completed and 5-6 cell drainage waste from 221-B was rerouted from the 201-B tank and cribs direct to this crib and tile field, by-passing the 361-B settling tank. In July 1951 the use of this crib and tile field was discontinued and the 5-6 wastes were rerouted. (See item #2) This area is enclosed with a wire fence and is posted with radiation zone signs.

7. 361-B Reverse Well(1)

From startup in about April 1945 the 224-B building waste and cell drainage from 221-B 5-6 sump were routed to the 361-B settling tank. The supernatant then overflowed into the 361-B reverse well which had been drilled to a depth of approximately 300 feet. In September 1946 the 224-B wastes were rerouted. (See item #1) However, the reverse well continued to receive the 5-6 cell drainage waste up to about October of 1947 at which time the presence of contamination in the ground water beneath the well was verified and the use of the well was discontinued completely. (See item #1 for reroute on 5-6 wastes) The area above ground is enclosed in a wire fence and is posted with radiation zone signs.

8. 201-C Crib

This crib (22' x 8' x 5' deep) is covered with 2' of dirt and located South of the 201-C building. Liquid wastes that are within the cribbing limits were first discharged from the Hot Semi-Works to the crib during January 1953. The area is enclosed with a fence and posted with radiation zone signs.

9. 216 ER, #1, #2, and #3 Cribs

The cribs (12' x 12' x 4' deep) are located approximately 1000 feet Northwest of the 221-B building. They have been receiving condensate of low level activity from the evaporators in the 221-U and 224-U buildings since November of 1952. (This waste is being jetted from 200 West to 200 East to make use of the thermal heat of this waste in keeping the encasement warm as an aid in jetting other more viscous wastes through the same encasement.) They are covered with approximately 10 feet of clean earth and are marked above ground with a wooden single rail fence and posted with radiation zone signs. Each crib is equipped with a filtered vent.

10. 222-B Dry Well

This well consists of a 3" diameter pipe sunk approximately 75 feet in the ground. The bottom 20 feet of the pipe was perforated to allow the liquid wastes to seep out into the soil. The well is located approximately 12 feet West and 3 feet North of the Northwest corner of 222-B. It was used to receive waste from the 222-B decontamination sink and sample "slurper" until the winter of 1949. (See item #12 for reroute of this waste) The area above ground is not delimited or posted in any way.

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(1) Term designating a pipe encased drilled hole, commonly called a reverse well, or a reverse flow well, or a dry well. The lower end of the pipe in the well is perforated to allow the liquid to seep out into the soil.

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11. 222-B Cribs

Two cribs cascading in series from east to west were built in 1949 to receive the 222-B decontamination sink and sample "slurper" wastes. Wastes from research work carried on in 292 were also directed to these cribs. The area is enclosed above ground with a wooden single rail fence and is posted with radiation zone signs.

12. 222-B Dry Waste Disposal Vaults

The two vaults in this area are adjacent to one another and located about 200 feet south of 222-B. The first vault built in 1945 is approximately 10' x 12' x 10' deep. It was constructed of wood and was filled in 1950. The second vault built in 1950 is approximately 10 feet in diameter and 30 feet deep. It was constructed of concrete rings and was still in use when the building was closed in 1952. The vaults are covered with approximately six feet of earth and waste is inserted into the vault through a 12 inch square baffled chute located over the center of each vault. The waste in these vaults is highly contaminated with alpha, beta and gamma activity. The area is enclosed with a wooden fence and is posted with radiation zone signs.

13. Solid Waste Burial Ground

This area located approximately 2000 yards east of the power house and 2000 yards south of the hot Semi-Works was used for disposal of packaged waste from the process buildings from 1945 to March 1953. In March 1953, prior to construction of the Purex canyon, all open trenches were filled with approximately three feet of clean soil. There are seventeen filled trenches each covered with approximately six feet of clean earth. A monument has been erected on the center line at the ends of all trenches. No records have been kept of the total activity buried here though dose rates on some of the packaged waste has been in excess of 35 rep/hr at surface. The area is enclosed with a wire fence and is posted with radiation zone signs.

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UNPLANNED DISPOSAL

1. 107-BY Tank

On December 16, 1952 approximately 23,000 gallons of first cycle supernatant was pumped out onto the ground via a loose flange on the overground transfer system. A maximum dose rate of approximately 150 rep/hr at one inch was observed over this contaminated area. The area was subsequently concreted over and is to be posted as containing underground contamination. See Sketch "A" for further information.

2. 102-103-BX Tank

In March 1951 an amount of first cycle waste escaped from the 102-BX tank apparently from a gasket leak in the overflow line to 103-BX. Geological test well No. 241-BX-130 became grossly contaminated when this liquid seeped into it. It is estimated that the volume of waste lost did not exceed 90,000 gallons.

3. 104-BX Tank

Removal of an electrode from a four inch riser on the tank in the Fall of 1951 resulted in the spread of metal waste contamination to the excavated pit around the riser. The pit was subsequently backfilled with approximately six feet of clean earth, but was not delimited in any way.

4. 153-BX Diversion Box

The area around the box was contaminated with metal waste solution in the Fall of 1951. No information is available on the amount of solution involved though dose rates in excess of 35 rep/hr at surface were observed. The contaminated area around the box has been blacktopped over but has not been posted as a radiation zone or as containing underground contamination.

5. 151-B Diversion Box

The area around the box was contaminated as a result of diversion box work in the Fall of 1951 and again in the Summer of 1952. The high level activity was removed and the remaining contamination was covered with approximately 12 inches of clean earth. The area concerned is not delimited or posted as a radiation zone or as containing underground contamination.

6. R-3 Radiation Zone

This area on the South side of 221-B is approximately 100 feet wide by 500 feet in length. A leak in an underground metal waste line in this area in 1946 resulted in the spread of an unknown quantity of activity to the ground. A portion of the area above the leak caved in but was subsequently back-filled with several feet of clean gravel. The area is enclosed with a wire fence and is posted with radiation zone signs. See Sketch "B" for specific location.

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7. 154-B Diversion Box

Metal waste solution was spread to the ground around the box as a result of work associated with replacement of a leaky jumper in the box late in 1946. The contamination was covered with approximately 12 inches of clean earth, the area enclosed with a wire fence and posted with radiation zone signs. The enclosed area is currently being used as storage space for miscellaneous contaminated equipment.

8. 102-C Tank

While installing equipment in the tank during the summer of 1951 contamination of low activity was spread to the surrounding excavation. The area was subsequently backfilled with approximately five feet of clean earth. The area is not delimited in any way.

9. 105-C Tank

Removal of a "thermal" element from the tank in the summer of 1951 resulted in the spread of metal waste contamination to the excavated area and surrounding ground surfaces. The majority of the contamination was removed to the Industrial Burial Ground and the remainder, which had dose rates up to 100 mrep/hr at two inches, was covered with approximately six feet of clean earth. The area is not delimited in any way.

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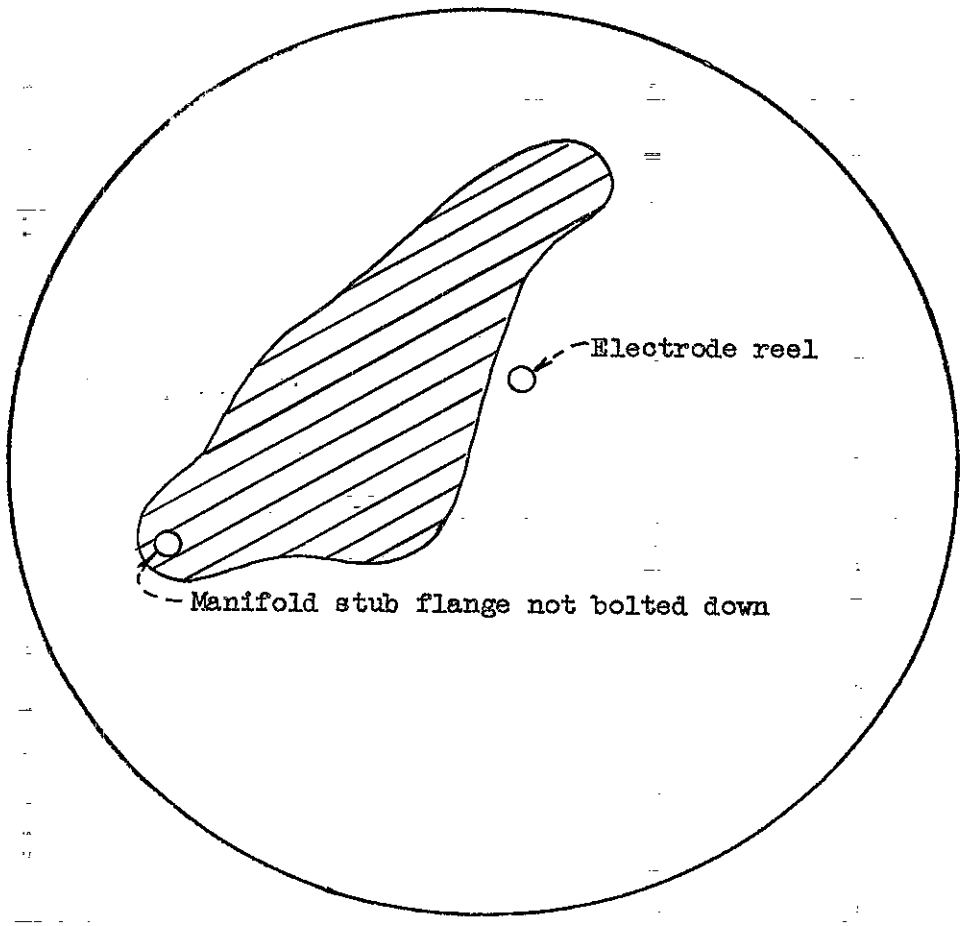
200 East



Contaminated Area
Maximum Dose Rate
150 rep/hr

107 BY Tank

SKETCH "A"

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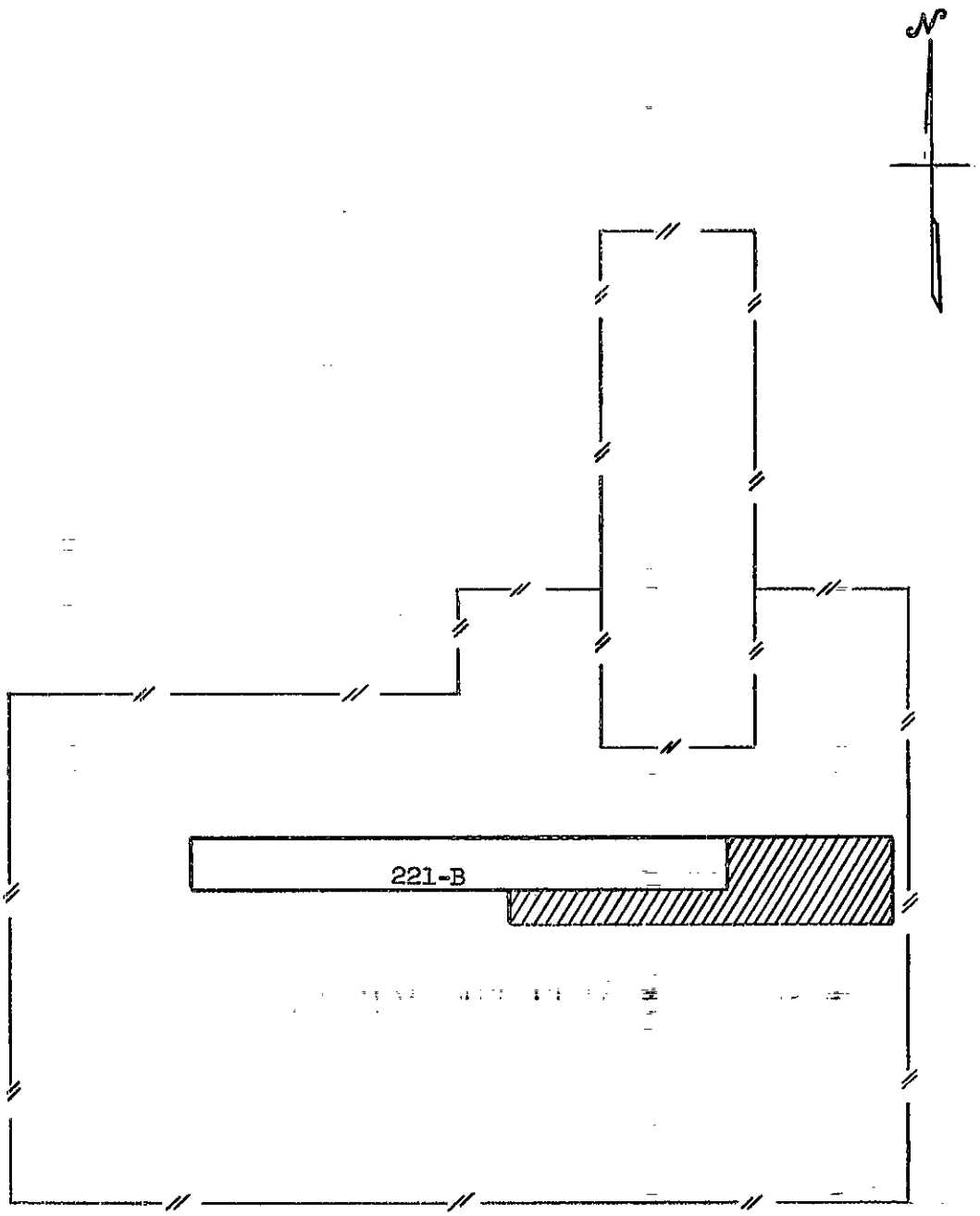
200 EAST AREA



B-FACILITY EXCLUSION AREA

R-3 Radiation Zone

SKETCH "B"

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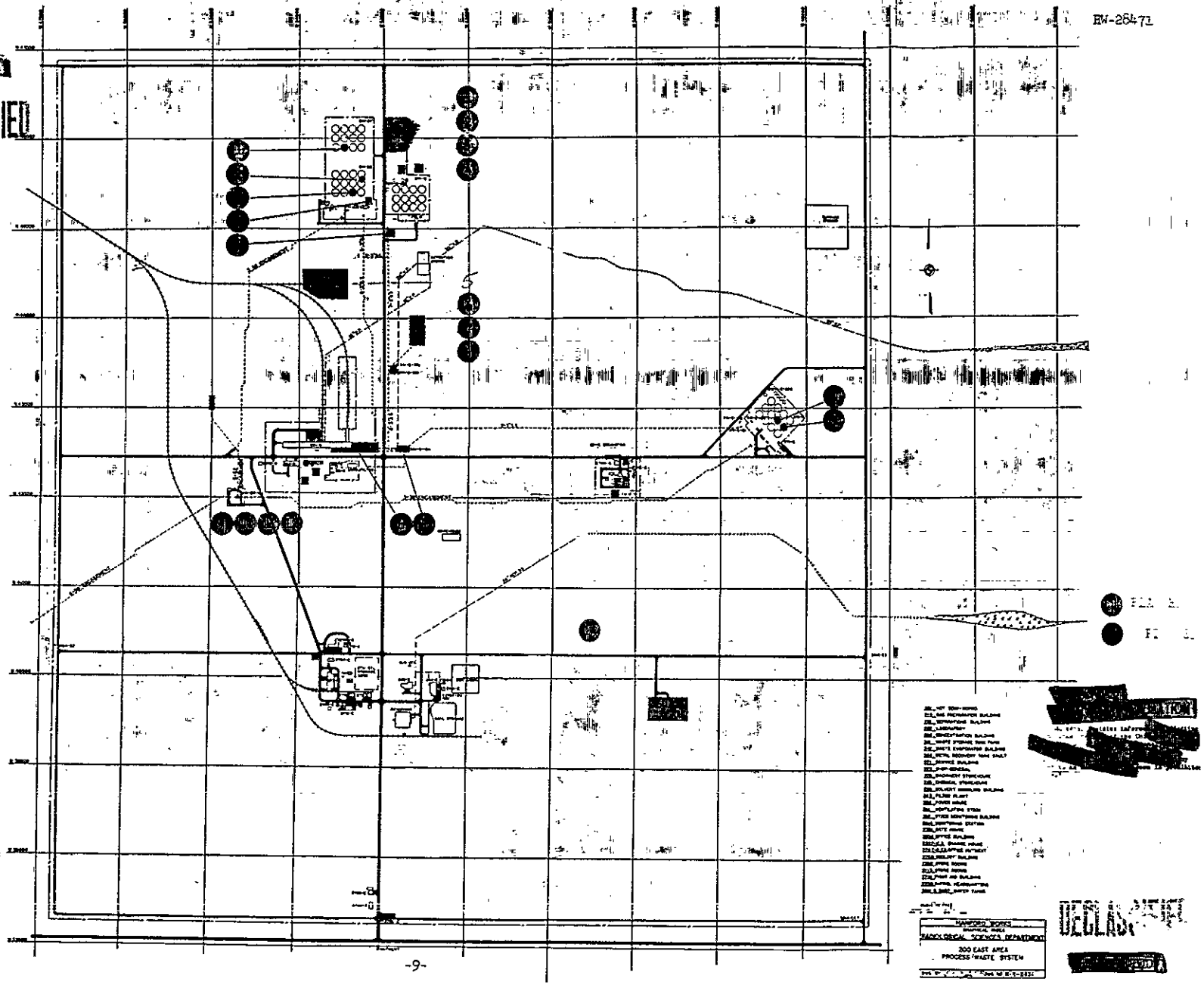

200 NORTH AREA

PLANNED DISPOSAL(1)

1. 212-N Storage Basin Crib #1

This crib was built in 1947 to receive all the basin water when it was drained in preparation for special tests that were to be conducted in the basin. It is covered with approximately six feet of clean earth and is enclosed above ground with a single rail wooden fence that is posted with radiation zone signs.

2. 212-N Storage Basin Crib #2

This crib was built to receive the water remaining in the storage basin when the area was shut down in June 1952. It is covered with approximately six feet of clean earth and is delimited by a rope fence and posted with radiation zone signs.

3. 212-P Storage Basin Crib

This crib was built to receive the water remaining in the storage basin when the area was shut down in June 1952. It is covered with approximately six feet of clean earth and is delimited by a rope fence and posted with radiation zone signs.

4. 212-R Storage Basin Crib

This crib was built to receive the water remaining in the storage basin when the area was shut down in June 1952. It is covered with approximately six feet of clean earth and is delimited by a rope fence and posted with radiation zone signs.

5. 212-N Swamp

This area received the normal overflow from the basin from startup in 1944 to shutdown in June 1952. Contamination with a dose rate up to 50 mrep/hr was observed in this swamp. The area was subsequently backfilled with clean earth to a depth ranging from two to six feet. It is posted with radiation zone signs though it is not delimited in any other way.

6. 212-P Swamp

This area received the normal overflow from the basin from startup in 1944 to shutdown in June 1952. Contamination with a dose rate up to 50 mrep/hr was observed in this swamp. The area was subsequently backfilled with clean earth to a depth ranging from two to six feet. It is posted with radiation zone signs though it is not delimited in any other way.

7. 212-R Swamp

This area received the normal overflow from the basin from startup in 1944 to shutdown in June 1952. Contamination with a dose rate up to 50 mrep/hr was observed in this swamp. The area was subsequently backfilled with clean earth to a depth ranging from two to six feet. It is posted with radiation zone signs though it is not delimited in any other way.

(1) See Sketch "C" for graphic details.

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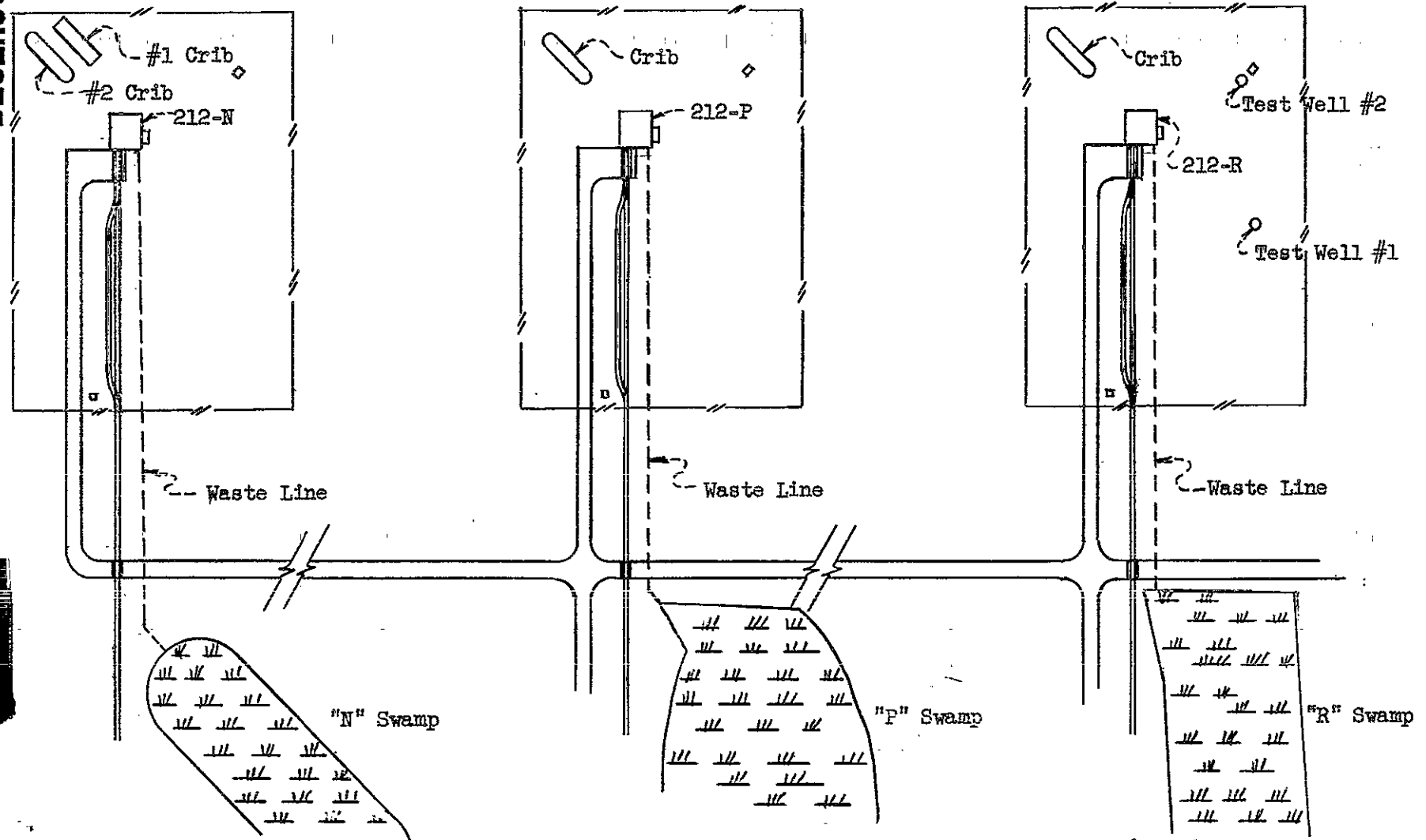
SKETCH "C"

200 North Areas



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PLANNED DISPOSAL

1. Unirradiated Uranium Waste Trench (Redox)

Approximately 81,500 gallons of liquid containing about 430 pounds of unirradiated uranium were discharged to this trench during the latter portion of 1951 and ending on January 8, 1952. The coordinates of this trench are N-35,300 and W-75,400. The trench has been backfilled with six feet of clean soil and is delimited above ground with "Do Not Excavate" signs.

2. 216-S Cribs

This disposal unit consists of two standard cribs (12' x 12' x 9' deep) in series and spaced 50 feet apart. The cribs are located 200 yards southeast of the 151-S diversion box. Condensate and cell drainage that was within cribbing limits was first discharged to the cribs in 1952. The cribs are buried under ten feet of dirt and are delimited above ground with a wood fence that is posted with radiation zone signs.

3. "U" Swamp

This swamp is located southwest of the 241-U tank farm and receives water from the powerhouse and water with low level activity from the laundry, 234-5, 231, and U Facility buildings. The swamp is not marked as a radiation zone.

4. 110-S Tank Sump

This open sump is located approximately 1000 yards west of the 241-S tank farm and receives cooling water from the 110-S tank condensers. No information was available as to volume and activity of the liquid discharged to this sump. The sump is still in use and is delimited with cloth tape in the approved radiation zone colors, and posted with radiation zone signs.

5. 276-S Crib

This crib, located 400 feet west of building 276-S, was built in 1951 and received contaminated organic waste from the solvent handling building. The crib is buried under ten feet of dirt and is delimited above ground with a wood fence that is posted with radiation zone signs.

6. 222-S Dry Waste Disposal Vault

This vault has been in use since early in 1952 receiving dry packaged waste from the 222-S laboratory. The vault is a steel tank approximately twelve feet in diameter, fourteen feet high and is buried with its top about six feet below ground level. The above-ground area is delimited with a chain fence and is posted with radiation zone signs.

7. Contaminated Hexone

Approximately 20,000 gallons of hexone contaminated with only trace quantities of unirradiated uranium used in the initial tests of Redox was buried about 350 feet southeast of the Redox sanitary tank farm in January of 1952. The waste buried in a trench approximately eight feet wide by 100 feet in length was subsequently covered with about six feet of clean earth. The area is enclosed above ground with a single rail wooden fence, and is posted with radiation zone and "Do Not Excavate within 20 feet" signs.

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8. 216-SL Crib

This crib has been in use since early 1952 receiving laboratory waste of low activity from the 222-S building. It is located approximately ten feet underground, and has a filtered vent above ground. It is enclosed with a single rail wooden fence and is posted with radiation zone signs.

9. Buried Contaminated Drums

Approximately fifty empty 55-gallon oil drums contaminated as a result of the particle problem in and around Redox and the MJ-4 area were buried about 500 yards directly east of the northeast corner of the Redox exclusion area fence and were covered with six feet of clean soil in December of 1952. The area is not delimited above ground.

10. 216-WR, #1, #2 and #3 Cribs

This disposal unit consists of three standard Hanford cribs and is located about 1000 feet south of the 224-U building. Wastes of low level activity from "U" plant were first discharged to the cribs in the summer of 1952. The area is delimited above ground with a wooden fence and is posted with radiation zone signs.

11. 234-5 Dry Wells #1, #2 and #3

Dry Well #1, located approximately 50 feet northeast of the 234-5 stack, receives potentially contaminated liquid wastes from the 234-5 tunnel drain sump. Dry Well #2, located about 50 feet northwest of the 234-5 stack and dry well #3, located about 150 feet directly north of well #2, receive the 234-5 evaporator condenser cooling water.

12. 234-5 #1 and #2 Cribs and Tile Field

This disposal unit is located approximately 200 yards south of 234-5 retention basin and receives waste of low level activity from the 234-5 building. All low level wastes from the 234-5 building were discharged to this unit from start-up in June 1949 until the summer of 1952 when the wastes were rerouted as per item #13 below.

13. 234-5 #3 and #4 Cribs

During the summer of 1952 the above cribs were constructed and tied in series to the line from the 234-5 building to the file field. These cribs are located approximately 100 feet east of #1 and #2 cribs.

14. Solid Waste Burial Ground

This burial ground, located northeast of the 231 building, was first used in 1944. Sixteen filled trenches have been backfilled over with six feet of clean soil and concrete posts with a "Do Not Excavate" sign placed at each end of the trenches. Two open trenches are being used for disposal of current waste. Wastes with dose rates exceeding 35 rep/hr at surface have been buried here. The entire burial ground is enclosed with a wire fence and is posted as a radiation zone.

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15. 231-W Reverse Well

This disposal unit consists of a 6" diameter pipe encased hole sunk to a depth of 150 feet. It is located approximately 130 feet east of the 231 building. It was in use for only a few months, February 1945 to June 1945, receiving liquid waste from the 231 building, when it became plugged with sludge. Approximately 50 gms of Pu associated with about 260,000 gallons of liquid were released to this unit during this period. See item #17 below for further routing of this waste.

16. 231-W, #1 and #2 Cribs

This disposal unit consisting of two cribs (12' x 12' x 4' deep) is located approximately 160 feet northeast of the 231 building. It was put into service in June, 1945 and received approximately 340 gms of Pu associated with about 7,100,000 gallons of wastes before it was sealed with sludge in February, 1947. See item #18 below for rerouting of this waste.

17. 231-W, #3 and #4 Cribs

Very little positive information has been found concerning the construction and period of use for these two disposal units. It is believed that the disposal unit identified for the purposes of this report as 231-W Crib #3 was merely a hole in the ground designed to receive the 231 building liquid wastes for a short period following the unexpected loss of the use of the 231 dry well in June 1945. The area has been backfilled and earth mounded up over it. It is now delimited above ground with a single rail wooden fence. It is located approximately 100 feet northeast of the 231-W dry well. The area identified as 231-W Crib #4 is located about 100 feet southeast of the 231-W dry well. It is believed to have also received some of the 231 building liquid wastes following loss of the dry well and during construction of the two cribs identified as 231-W, #1 and #2. The ground has caved in over this area suggesting that it may have been constructed with a wooden top. The area is now enclosed with a single rail wooden fence. See sketch D attached.

18. 231-W Trench

This trench (150' x 8' x 2') is located approximately 600' east of the 231 building. Liquid wastes from the 231 building have been routed to this trench since February, 1947. The trench is covered with a wooden top which is, in turn, covered with dirt. The area is surrounded by a wire fence and is posted with radiation zone signs.

19. 216-U, #1 and #2 Cribs

This disposal unit consisting of a concrete tank 20 feet by 20 feet, 231-U-361, and two standard Hanford cribs in series is located approximately 800 feet west of the 224-U building. Contaminated wastes from the TBP solvent treatment building are discharged to this unit. The area is delimited above ground with a single rail wooden fence and is posted with radiation zone signs.

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20. U Facility Unirradiated Uranium Waste Trenches

Approximately 1,190,000 gallons of liquid containing about 16,000 pounds of test run unirradiated uranium were discharged to these trenches following start-up of the facility in 1952. Coordinates of the center lines of the trenches are: W-39,000; W-72,920; and W-39,035 and W-72,960. The trenches have been backfilled, and the area is delimited by a rope fence posted with radiation zone signs.

21. Decontamination Area

This area consisting of three open trenches is used when decontaminating heavy equipment. It is located approximately 200 yards west of "T" Facility and was constructed in 1951. The area is posted with radiation zone signs and after each steam cleaning operation the trench is backfilled with three feet of clean soil. Contamination of only low level activity has been discharged to the trench to date. Refer to sketch "E" attached.

22. 361-T Reverse Well

This 8" diameter pipe encased well is 206' deep and is perforated from a depth of about 104 feet to the bottom. From start-up in 1945 to August, 1946 the well received the overflow from the 361-T settling tank which in turn was receiving waste from the 221-T 5-6 cell drain sump and the 224-T building.

23. 361-T, #1 and #2 Cribs (5-6 W)

Two standard cribs (12' x 12' x 4') were constructed near the 361-T reverse well in 1946. Overflow of the 224-T and 5-6 cell wastes from the 361-T dry well to these cribs was first noted in August, 1946. In November, 1946 the 224-T wastes were rerouted. See items #25 and 26. The 5-6 cell wastes continued to these cribs via the 361-T settling tank and dry well until June, 1947. At this time the waste was routed direct to the cribs by passing the settling tank and dry well. In June, 1951 the waste stream was rerouted to the 2nd cycle waste systems, see item #25. The area is enclosed with a single rail wooden fence and is posted with radiation zone signs.

24. 153 TX Crib and Tile Field

This disposal unit consists of a standard crib and tile field and is located in the 241-TX tank farm. It receives the condensate from the 242-T waste evaporator. Waste with only low level activity were first discharged to this unit in September, 1951.

25. 241-T #3 Crib and Tile Field (2nd Cycle)

Second cycle waste from 221-T has been routed since start-up to tank storage in 241-T with the supernatant overflowing into the crib and tile field just west of the 110-111-112 tanks in 241-T. Supernatant did not begin to overflow until April 1948. In June 1951 the 221-T 5-6 cell wastes were routed to this unit. In June 1952 the 224-T Wastes were also routed via the 110-111-112-T tanks to this unit. This area is within the 241-T tank farm but is not further delimited.

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26. 241-T, #1 and #2 Cribs (200-T Tank Series Cribs)

This disposal unit consisting of two cribs in series which received the overflow from the 201 and the 204, 3, and 2 tanks in series is located in the 241-T tank farm. It received the 224-T wastes from November 1946 to June of 1952 at which time the wastes were rerouted. See item #25.

27. "T" Swamp

This area has been in use since start-up receiving process vessel cooling water from the 221 and 224-T buildings. The water is directed to the swamp via the 207-T retention basin and 500 feet of pipe followed by approximately 500 feet of open ditch. The ditch and swamp are posted as a "Possibly Contaminated Area".

28. 200 West Industrial Burial Ground

This burial ground located northwest of the T-Facility is used for the disposal of contaminated process equipment. The first trench dug in 1947 and three additional trenches have been filled and were covered with about six feet of clean earth. Two open trenches are in use at this time. No data is available as to the total activity buried here though dose rates in excess of 35 rep/hr at surface have been observed on some of the equipment buried. The area is enclosed with a wire fence and is posted with Radiation zone signs.

29. Uranium Burial Trench ("T" Facility)

Unirradiated uranium waste from test runs during the original start-up of "T" Facility was buried in a trench located about 100 yards northwest of the 221-T building. The trench was backfilled with two feet of clean soil and is enclosed with a single rail wooden fence but is not otherwise posted.

30. 222-T Dry Well

This well consists of a three-inch diameter pipe sunk approximately 75 feet in the ground. The bottom 20 feet of the pipe is perforated to allow liquid waste to seep out into the soil. The well is located approximately 12 feet south and three feet west of the southwest corner of 222-T. It was used to receive waste from the 222-T decontamination sink and sample "slurper" from start-up until the spring of 1950. See item #31 for reroute of these wastes. The area is enclosed in a single rail fence but is not otherwise posted.

31. 222-T Cribs

Two standard "Hanford" type cribs cascading in series were built in the spring of 1950 to receive the 222-T decontamination sink and sample "slurper" wastes. These cribs are located approximately 500 feet east of 222-T. The area is delimited above ground by a single rail wooden fence but is not otherwise posted.

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32. 222-T Dry Waste Disposal Vaults

This disposal group consists of three vaults receiving dry packaged waste from the 222-T building. The first one built in 1944 and the second one built in 1949 are of wooden construction about 10' x 12' x 10' deep and covered with about six feet of clean earth. The third vault built in 1950 is approximately 10 feet in diameter and 30 feet deep. It was constructed of concrete rings and is the only one of the three vaults still in use. Waste is inserted into the vault through a 12 inch square baffled chute located over the center of the vault. All three vaults are located in a north-south line approximately 200 feet east of the 222-T building. The area is enclosed with a single rail wooden fence and is posted with radiation zone signs.

33. 222-U Dry Well

This well consists of a three-inch diameter pipe sunk approximately 75 feet in the ground. The bottom 20 feet of the pipe is perforated to allow liquid waste to seep out into the soil. The well is located approximately 12 feet south and three feet west of the southwest corner of 222-U. It was first used to received liquid wastes from the 222-U laboratory in the spring of 1947. Both plutonium and fission products wastes from the decontamination hoods used in the laboratory drain into this unit. The area is not delimited above ground nor is it otherwise posted.

34. 155-TX Catch Tank

In November 1952, a contaminated nitric acid solution was pumped from the 155-TX catch tank to an excavation southeast of the 155-TX diversion box. The excavation was backfilled with about three feet of clean earth. The area is delimited with a single rail wooden fence and is posted with radiation zone signs.

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UNPLANNED DISPOSAL

1. Redox Swamp

This area located about 3000 yards southwest of the 202-S building is outside the west area fence. Process tank cooling water from the Redox building is released to this area via the 207-S retention pond. In October 1952 and on several other occasions since then a leak in a process tank cooling coil resulted in the release of considerable contamination to this area. A dike has been built around the swamp to confine the contamination to as small a surface area as is feasible. Dose rates up to 2 rep/hr at surface have been observed at the edge of the swamp. The area is delimited with cloth tape of the approved radiation identifying colors and is posted with radiation zone signs.

2. 203-S Tanks

The ground around the 203-S uranium storage tanks was contaminated with uranium in the summer of 1952. A maximum survey reading of 10,000 c/m at one inch was observed in this area. The contaminated area was covered with asphaltic "black top" material and the area enclosed with a single rail wooden fence posted with radiation zone signs.

3. 110-S Tank Air Condenser Overflow

The cooling water supplied to the air condensers on the 110-S waste tank became contaminated in the fall of 1952 from the condensing vapors arising from within the tank. This resulted in the spread of contamination to the condenser cooling water receiving pond located just east of the 241-S tank farm. A maximum dose rate of 10 rep/hr at surface was observed over this pond prior to its being backfilled with two feet of clean earth. The area is enclosed with a single rail wooden fence and is posted with radiation zone signs. Contamination was also spread to the ground surrounding the condensers within the 241-S tank farm area. This contamination was "oiled" down to prevent further spread prior to its removal. This area within the tank farm was delimited with rope.

4. Redox "Particle" Field

An area including the east portion of the Redox exclusion area, and extending eastward for several hundred yards was contaminated in the spring of 1952 with radioactive particles emitted from the Redox stack. The activity was due essentially to radioactive ruthenium. Gross beta activity of some of the particles approached 0.1 μc. The area with the highest concentration of these particles is delimited and posted as a radiation zone.

5. 106-U Tank

Removal of re-enforcing rings from a 36" manhole on the tank in the summer of 1951 resulted in the spread of contamination to the concerned excavated area. The contamination was subsequently covered with several feet of clean soil. The area is not delimited above ground.

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6. 107-U Tank

Removal of a thermal element from the tank in the fall of 1951 resulted in the spread of contamination to the concerned excavated area. The contamination was subsequently covered with ten feet of clean soil. The area is not delimited above ground.

7. 151-U and 152-U Diversion Boxes

The ground around these boxes was contaminated during the course of diversion box work in the spring of 1950. A maximum dose rate of 20 mrep/hr at surface was observed in this area. A portion of the contamination was removed and the remainder covered with 12 inches of clean soil. The area is delimited with rope and is posted as a radiation zone.

8. 107-TX Tank

During Minor Construction work in the 241-TX farm in the spring of 1952 the heel and sluice jets of the 107-TX tank became quite contaminated. Dose rates in this area were observed to be as high as 35 rep/hr at surface. The area was subsequently backfilled with approximately six feet of clean earth. The area is not delimited above ground.

9. 106-TX Tank

Removal of a pump from the tank in the summer of 1952 resulted in the spread of considerable contamination to the surrounding ground. The contamination that was spread outside the tank farm fence line was removed while that inside the tank farm was "oiled" down and subsequently covered with about six inches of clean soil.

10. 105-TX Tank

Removal of electrodes from the tank in the fall of 1951 resulted in the spread of contamination to the surrounding ground area. The area was subsequently covered with a concrete slab and later backfilled with approximately six inches of clean soil.

11. 118-TX Tank

The ground in the vicinity of 118-TX became contaminated during the spring of 1951 when leaks developed in the pump and line that was being used to pump 1st cycle waste to the 242-T waste evaporator building. A maximum dose rate of 1 rep/hr at two inches was observed in this area. The contaminated area was oiled and subsequently covered with six inches of clean soil.

12. 155-TX Diversion Box

Contamination has been spread from this diversion box to the surrounding ground at various times during the past few years. An area on three sides of the box has been "black topped" to fix the contamination.

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13. 242-T Building

While jetting concentrate from the waste evaporator in the spring of 1951 a few gallons of the waste was forced up and out of an open riser located above ground on the south side of the 242-T building. A maximum dose rate of 2 rep/hr at two inches was observed on this contamination. A portion of the contamination was removed and the balance covered with twelve inches of clean soil.

14. Waste Line 242-T to 207-T

In October 1952 contaminated water was observed to be rising to the ground surface above the waste line between 242-T and 207-T. The leak in the line was repaired and the contaminated areas covered with about twelve inches of clean soil and gravel. The area is delimited with rope and is posted with radiation zone signs.

15. 151-T and 152-T Diversion Boxes

Diversion box work performed in the spring of 1950 resulted in contamination spread to the ground around both boxes. A portion of the comtamination was removed and the balance covered with about twelve inches of clean earth. The area is delimited with rope and is posted with radiation zone signs.

16. Old Burning Ground.

Contamination was discovered in the spring of 1950 in the old burning ground which is located approximately 1500 feet east of the U Facility. Approximately 150 square feet of ground was observed to be contaminated. A maximum dose rate of 45 rep/hr at two inches was detected. The area was subsequently covered with about ten feet of clean earth. The location is not delimited above ground.

17. R-19 Radiation Zone

A leak in an underground metal waste line at the southeast corner of the 221-T building in the spring of 1947 resulted in the spread of an unknown quantity of activity to the ground. A maximum dose rate of 20 r/hr at the surface of the ground was observed at the time the incident was detected. The area was subsequently covered with several feet of gravel and was enclosed with a wire fence. The area is posted as a radiation zone.

18. Particle Field SE of the 200 West Industrial Burial Ground

Contamination was discovered over a fairly large area SE of the industrial burial ground in the spring of 1949. It is believed that the contamination had blown from an open trench in the reference burial ground. Spots of contamination with a dose rate of 100 mrep/hr at surface uncorrected for source size were observed within the area. The area was posted with "Possible Contaminated Area" signs. Reference previous sketch "E" attached.

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19. T Facility Railroad Cut

Contamination from cask cars and equipment being hauled to the burial ground was spread to the ground along the railroad on several occasions during 1949. In the spring of 1950 the contamination was covered with about ten inches of clean gravel. The area is within an established radiation zone.

H. G. Ruppert
By B. C.

H. G. Ruppert
RADIOLOGICAL SCIENCES DEPARTMENT

HGR:bsc

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200 West

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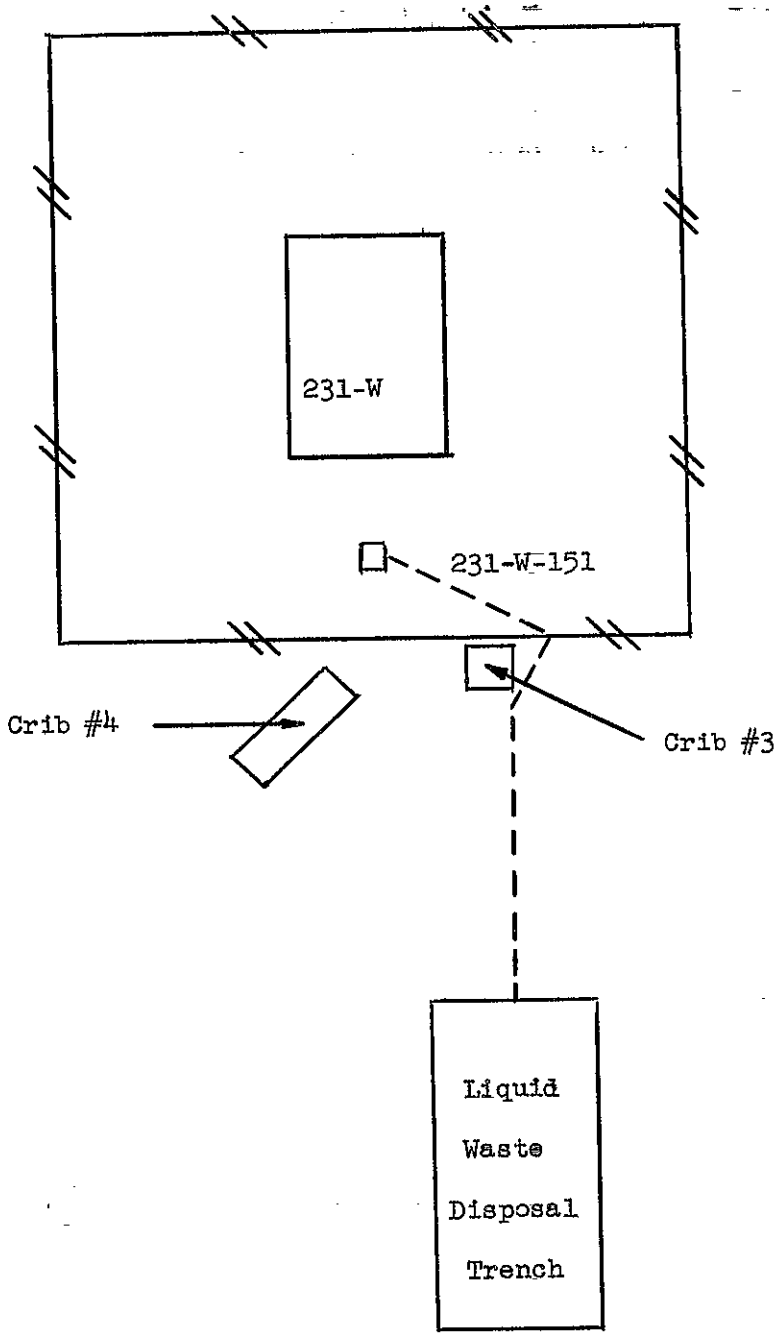

SKETCH "D"

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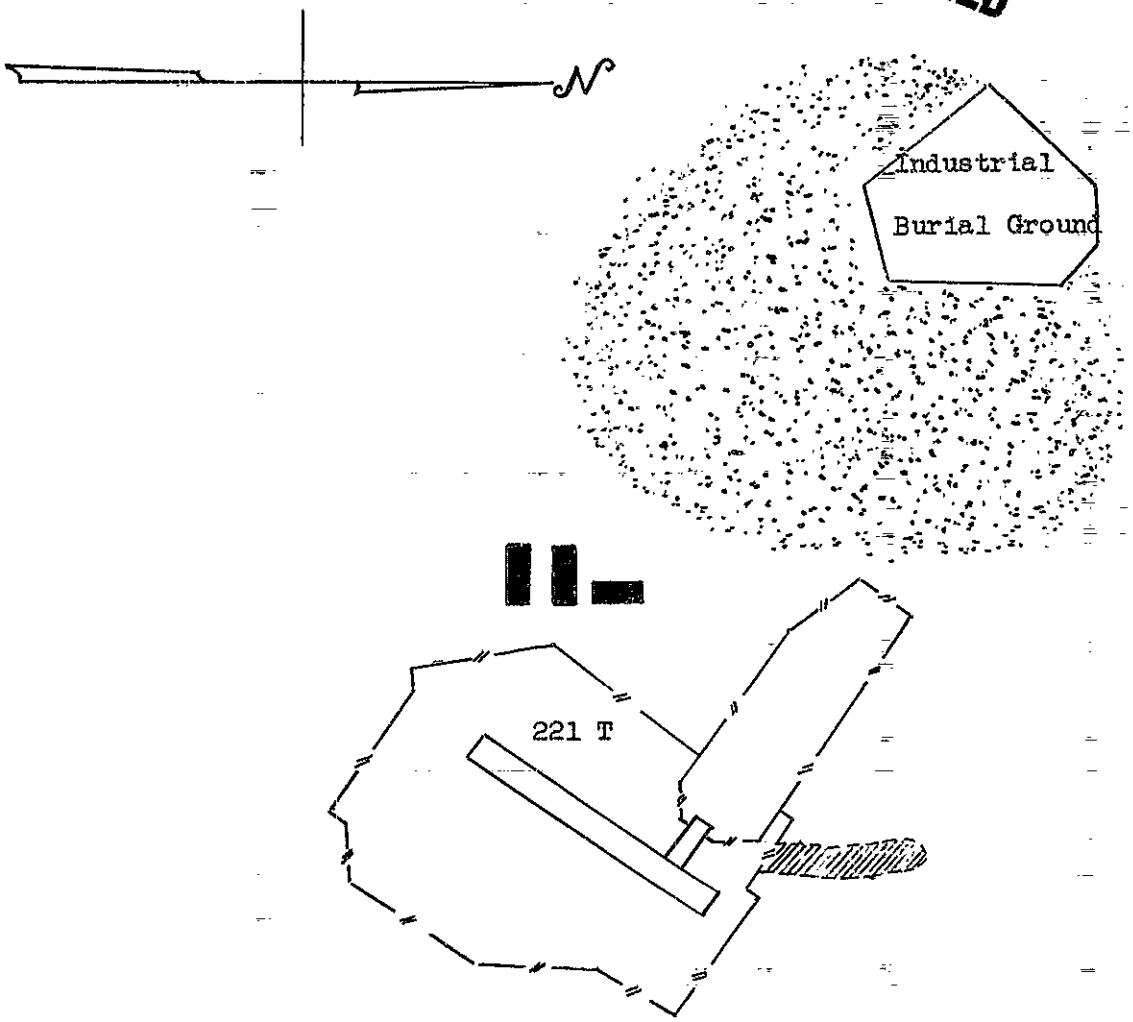
200 WEST AREA



Steam cleaning decontamination pits

Trench containing T-Facility test run unirradiated uranium wastes. Reference item No. 29 - Planned Disposal, 200 West.

'Particle' field. Reference item No. 20 - Unplanned Disposal, 200 West.

SKETCH "E"

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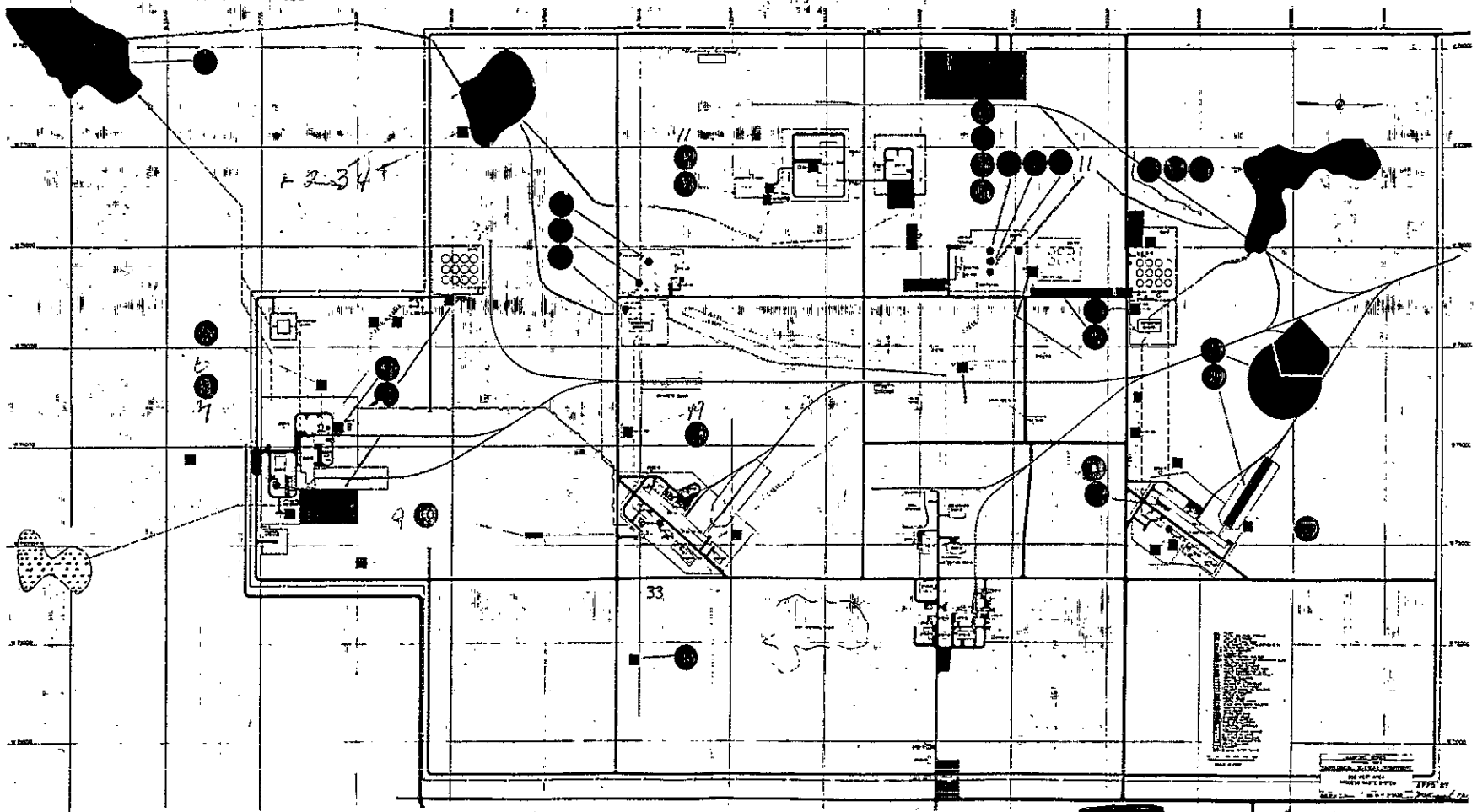

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